

WBI Africa Cluster Case Study

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**Knowledge, Technology and Growth: The Case Study of Kamukunji  
Jua Kali Enterprise Cluster in Kenya**

**Mary Njeri Kinyanjui**

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## 1.0 Introduction

The *jua kali* economy is a sprawling phenomenon in the city of Nairobi. It consists of micro and small enterprises located in open spaces with poor infrastructure and substandard architectural designs. The *jua kali* economy has a wide range of sectors including metal, trade, garments, woodwork manufacturing and vehicle repair as well as trade and services. These sectors are well integrated as strong forward and backward linkages characterize businesses. About eight million people in Kenya are directly or indirectly employed in the informal economy and it contributes about 18 % of the GDP.<sup>1</sup>

A notable feature of the *jua kali* economy is its spatial manifestation in clusters. The clusters emerge spontaneously or entrepreneurs are forced to locate in certain parts by the city authorities. In these clusters, firms are located in close proximity to each other in small sheds of two by two meters (Kinyanjui, 1998). It is also common to find some entrepreneurs subletting their premises to others in the cluster.

Kamukunji is one of the oldest *jua kali* clusters in Nairobi. It evolved from a spontaneous settlement of a few metal workers and was recognized as a *jua kali* cluster in the 1980s. The co-location of micro and small enterprises in the cluster has facilitated the evolution of multiple transactions based on numerous relationships between entrepreneurs, brokers, traders and input suppliers.

A complex web of economic and non-economic relationships and transactions evolve in *jua kali* clusters. These transactions include the flow of knowledge and technology. Knowledge and technology transactions range from simple exchange of ideas between two entrepreneurs on raw materials, production and marketing to full scale copying of new product designs in the cluster. On the job learning takes place in the cluster and facilitates intergenerational transmission of knowledge and technology (Kinyanjui, 2000).

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<sup>1</sup> Communication from the chief executive officer of the Federation of Jua Kali Association.

Knowledge and technology based transactions are very common in the cluster. Entrepreneurs learn from each other everyday. The main sources of knowledge and technology are entrepreneurs' self-initiatives and customers.

This paper examines the knowledge and technology situation in Kamukunji *jua kali* cluster. The analysis is based on twenty case studies of entrepreneurs from the cluster. The twenty case studies were selected purposively for in depth interviews on the knowledge and technology situation in the cluster. Further information was obtained from officials of the Kenya Federation of Jua Kali Associations and the Kamukunji *Jua Kali* Association officials.

In Africa, studies of clusters' based production strategies are fairly limited especially those related to knowledge and technologies. Clusters in Africa in general and Kenya in particular are said to be plodding along and unless public policy interventions are made the clusters will remain undynamic (McCormick and Kinyanjui 2004; McCormick 1999). Often the conclusion drawn is that most of the *jua kali* clusters are at very low levels of development and need upgrading.

## **2.0 Profiles and Organization of Kamukunji Jua Kali Enterprise Cluster**

### **2.1 The origin of Kamukunji Jua Kali cluster**

Kamukunji *Jua Kali* enterprise cluster is situated to the east of the Nairobi Central District and occupies about 10 hectares. It has a population of 5,000 artisans<sup>2</sup>. The colonial government designated the area as a business centre for Africans. In the early days it evolved as part of the colonial urban policy that segregated space on the basis of race. Business activities carried out in the cluster were restricted to micro and small businesses that served African consumption patterns. Trade licenses were issued to businesses engaged in the sale of indigenous foodstuffs, repair and artisan manufacturing activities including the production of cooking pans and hand tools to meet African household demands. During this period, the cluster served as the economic nerve point

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<sup>2</sup> Communication from Kamukunji *jua kali* officials

for the burgeoning African settlements such as Majengo, Muthurwa, Burma and Shauri Moyo. It also served the needs of customers and traders from rural areas since it was located in close proximity to Machakos Bus Station, which was the destination of all buses from the countryside, a locational advantage that it still enjoys up to today.

At independence in 1963, most of the African businesses were located in the Eastlands and little was done to change the status quo. The Africanisation strategies documented in the Sessional Paper no 10 of 1965 and subsequent five-year development plans were concerned with the Africanisation of European and Asian businesses and did not address issues related to the situation of African *jua kali* businesses such as those in Kamukunji.

In post independence Kenya, income and education levels are the most important locational determinants of businesses in the city or those seeking businesses in *jua kali* enterprise clusters. Most of the new investors in the cluster used family, rural origin and friendship networks to start businesses in the Kamukunji cluster. In deed, the cluster served as the access pool of rural immigrants with low levels of education whose migration to the city intensified after the abolition of migration rules and regulation.

In the first two decades of independence, government support to the cluster was largely absent. Like most of the informal settlement, Kamukunji *Jua Kali* cluster was subjected to harassment by city authorities to control its expansion. The city authorities used the health act to demolish buildings that were put up by the entrepreneurs in the site.<sup>3</sup>

The thinking among academics, planners and politicians during this period was that modernization and import substitution industrialization would replace the indigenous modes of production and business organizations. Policy targeted medium and large-scale firms rather than *jua kali* businesses. Unfortunately, modernization of *jua kali* clusters did not take place and indigenous forms of production and negative perception of *jua kali* businesses in such places as Kamukunji persists up to today.

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<sup>3</sup> Communication from one of the twenty respondents.

Notwithstanding, this exclusion from the official government policies, the *jua kali* economy in Kenya in general and Kamukunji in particular, has evolved growth strategies.

A respondent observed that, knowledge and technology transfer, which is one of the strategies, involves the development of on job learning and training programmes whereby established artisans train young immigrants at a fee. These on job learning and training programmes constitute the main sources of intergeneration transfer of knowledge and technology in the cluster. The respondent further observed that since she joined the cluster in 2001, she has trained about a hundred trainees on how to make sewing machine stands. She also observed that the demand for training is high and sometimes she has been forced to turn away trainees because of lack of enough resources to meet the demands.

The second way involves the use of social networks. A potato chips cutter manufacturer observed that he always turns to acquaintances or individuals making the same things as he does when he needs help in joining or folding metal or in cases where a customer brings in a new product that is difficult to make. The third strategy was the widespread replication and imitation of imported goods or those made locally in medium and large enterprises. This phenomenon was reflected in the making of electric chicken brooders and chaff cutters in the cluster. These knowledge and technology strategies that Kamukunji entrepreneurs apply constitute the foundation of a dynamic sector that contributes significantly to employment and production of goods and services. According to one official of the Kamukunji *Jua Kali* Official, 75% of metal boxes and 80% of wheelbarrows in the country are made in the cluster. This has been achieved through collective learning experiences in the cluster.

### **2.3 Rationale for selecting Kamukunji**

Several key factors prompted the choice of Kamukunji *Jua Kali* enterprise cluster. To begin with literature already exists on the cluster (McCormick 1999, Kinyanjui 1998; King, 1996). This literature describes the important role the cluster plays in employment generation and wealth creation for a large majority of Kenyans. The literature also

highlights the specific problems that Kamukunji and other *jua kali* clusters face in their evolution as social, economic and political entities.

The geographical location of the cluster makes it suitable for business. Machakos Bus Station ensures that the cluster is well connected to all parts of Kenya. Many buses and coaches begin and end their journeys at this station. Its location within walking distance from Kirinyaga Road and Industrial Area facilitates movement of goods and services as well as the flow of knowledge and information. Its proximity to these areas also facilitates personal contacts, which include face-to-face relations, which are crucial to the flow of knowledge from these areas to the cluster. A Kamukunji *jua kali* entrepreneur can pass via Kirinyaga Road in the Central Business District to view the latest designs of metal products and machines.

Kamukunji cluster benefited from the government's change in attitude towards *jua kali* enterprises as reflected in the Sessional Paper No 10 of 1986. Since then, the cluster has experienced support from the government, donor organizations and international financiers<sup>4</sup>. The government recognized the importance of Kamukunji *Jua Kali* enterprise cluster to the urban and national economy and facilitated the construction of sheds for the entrepreneurs who until then worked under the hot sun. The government also advised them to form *Jua Kali* associations, which would articulate the interests of entrepreneurs and facilitate government *jua kali* relationships in the future.

### **2.3 Composition of Kamukunji *Jua Kali* enterprise cluster**

Kamukunji *Jua Kali* cluster has several metal work sub-sectors. The first consists of business support services, which include scrap metal dealers, metal cutters and folders, gas and electrical welders, welding rod suppliers, polish and paint traders. The second sub-sector constitutes the metal engineering producers who make folding and pressing machines and other metal handling accessories for use within the cluster or elsewhere. Metal products manufacturers are the most important category and are classified on the basis of the products they make. Wheelbarrows, sewing machine stands, chaff cutters,

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<sup>4</sup> Communication with *jua kali* officials

boxes and aluminum cooking pans are some of the most important products. Other products include energy saving stoves, chips cutters and warmers as well as agricultural, transport and construction equipments.

#### **2.4 Human capital characteristics in Kamukunji jua kali cluster**

One respondent observed that the cluster serves as a springboard of new entrepreneurs not only in the cluster but also in other parts of the country. Entry to the cluster depends on whom you know and this determines the knowledge and technology networks in the cluster. Once in the cluster, the entrepreneurs are socialized on how to become *jua kali* entrepreneurs as well as join the *jua kali* learning society.

The fraternity of *jua kali* learning society imbues on individuals the value for self-development, self-initiatives, hard work and co-existing together with other entrepreneurs despite being competitors. It is because of these values that low levels of education do not deter the entrepreneurs from being creative. In addition, the entrepreneurs conform to the heritage of doing business through interdependencies. This heritage is not gained by *jua kali* enterprises that are not clustered.

The cluster has a mix of individuals with varying education levels. Out of the twenty case studies, seven had completed secondary level education while six had primary level of education. Five of the respondents were Kenya Polytechnic graduates while two were university graduates. In terms of skill levels, only five had skill certificates from the Directorate of Industrial Training. The rest obtained skills on the job and have not had their skill level certified. Most of the respondents (17) obtained skills from friends while three obtained their skills from relatives. This further reinforces the role of social networks in knowledge and technology transfer.

#### **2.5 Firm characteristics in Kamukunji jua kali cluster**

The cluster is dominated by micro (1-3 workers) and small (4-10 workers) enterprises that are located close to each other with some even sharing the same shed. A shed can house as many as three different entrepreneurs. Three of the case studies had 10 workers,

four had five workers, three had five workers and 10 had no employees. Trainees are an important feature in the cluster. Training is mainly practical and constitutes the main medium of knowledge and skill transfer. Some of the trainers have as many as five trainees aged between 15 and 20 years.

## **2.6 Customers and markets for Kamukunji jua kali cluster**

The cluster serves local, national and regional markets (mainly Uganda and Rwanda). Nairobi and its environs are the largest source of customers. Wheelbarrows, sewing machine stands and boxes are the main products distributed in the national and regional markets. Chicken troughs and chaff cutters are sold to rural areas. Potato chips cutters, deep fryers and warmers are sold in small towns as well as the city of Nairobi. Most of the enterprises have regular customers some of whom are drawn from the entrepreneurs' rural homes while some belong to the same ethnicity of the entrepreneur.

## **3.0 Knowledge and Technology in Kamukunji jua kali cluster**

### **3.1 Definition of knowledge and technology**

Knowledge is the awareness or consciousness of facts, methods and issues of an object or phenomenon while technology refers to methods or techniques of doing things. Firms require immense knowledge to facilitate their decision-making processes in production, sourcing of raw materials, customers and market. The search for knowledge in *jua kali* businesses is a continuous process that is not deterred by entrepreneurs' low levels of education, limited investment in human capital and research and development. According to one respondent, in-cluster competition between the artisans was a major factor contributing to skill development and subsequent technological advancement. Another respondent observed that knowledge within the cluster helps individual entrepreneurs to be innovative giving it a competitive edge over other clusters in the city and the rest of the country.



### **3.2 The status of knowledge and technology in Kamukunji jua kali cluster.**

Firms in Kamukunji *jua kali* cluster use mainly manual technologies in their production processes. Knowledge and technology status is high and beyond the entrepreneurs' levels of education and skills. They are knowledgeable on entrepreneurship, raw materials, production and marketing. As far as entrepreneurship is concerned, metal workers are self-confident, optimistic, take calculated risks, collaborate and are flexible enough to adapt to changes notwithstanding the hostile and poor business environment they operate in.

According to four entrepreneurs in the case study, most of the entrepreneurs in the cluster have a thorough understanding of metal qualities and accessories. In production, they are conversant with engineering processes and skills for bending, folding, pressing and joining metals to make telephone booths, aluminum cooking pots, chaff cutters and chips warmers, among other things. They also exhibited knowledge in production designs.

With regard to marketing, the entrepreneurs exploit the position of co-location with other businesses as a marketing strategy. They also use on site brokers who direct customers to specific producers. These brokers are paid a commission on every product purchased by a customer. The more aggressive entrepreneurs hawk their products to hardware shops and retailers in the city centre. In addition, the entrepreneurs take advantage of annual *jua kali* exhibitions organized by the Ministry of Labour and the Kenya Federation of Jua Kali Associations held in Nairobi, Kampala and Dar' es Salaam.

### **3.3 Sources of Knowledge and Technology**

Knowledge and technology does not come easy in the cluster. The road for accumulating and generating knowledge and technology for the *jua kali* entrepreneur is rough and tough. Self-initiative, creativity, risk, endurance and drive are attributes that *jua kali* entrepreneurs in Kenya in general and those in Kamukunji in particular must have so as to generate new knowledge and technology. The cost of seeking knowledge and technology through self-initiatives, trial and error, frustrations and wastage of time and money, though not costed run into thousand of shillings.

Instead of *jua kali* technicians being hostile to each other as competitors, they have mutual trust. This mutual trust between entrepreneurs facilitates technological spillover and learning processes to take place. Almost all the entrepreneurs have someone they know or whom they helped to join the cluster. These acquaintances are relatives, friends or some come from the same rural home origins.

Entrepreneurs' self-initiatives are enhanced by peer learning networks in the cluster. Together, peer entrepreneurs' design and make products similar to those made in formal enterprises, imported or those brought in by customers. These peer networks evolve after long periods of association and facilitate informal joint action in the cluster. The peer networks, which define the rules and regulations of learning, are both real and virtual. They are based on acquaintances, homeboys' networks, ethnicity, same sector groups and associations and are often used when need arises.

Customers are a vital source of knowledge and technology to the cluster. These customers include individuals, households and traders. Customers bring in product designs to the *jua kali* entrepreneurs who use their own intuition to create custom made products. Recognized and well-established *jua kali* trainers are also sources of knowledge and technology.

Most of *jua kali* entrepreneurs are technicians who have accumulated technical knowledge on metal work. They are therefore able to imitate designs of new products in the market. Some of the respondents claimed to have had a learning experience of 14 years in the cluster. The trainers are often a group of entrepreneurs who enhance intergenerational transfer of knowledge and technology. On the job training takes place through observation and practical activities.

### **3.4 Knowledge and technology knowledge transfer**

The transfer of knowledge and technology between non-*jua kali* firms and Kamukunji *jua kali* cluster is indirect. It takes place through former factory workers who after being laid

off seek self-employment at the cluster. They use the knowledge gained in previous employment to make products similar to the ones they used to make at the factory.

The other sources of knowledge and technology are mainly workers from large companies who came to work in the cluster during their free time especially during weekends or run businesses parallel to their jobs. These entrepreneurs transfer skills to the cluster and become members of virtual joint action networks. The entrepreneurs imitate and copy products from local industries. This is reflected in the making of *simu ya jamii* telephone stands that were copied from the Post Office telephone booths.

Apart from a few graduates of polytechnics and local universities who have businesses in the cluster, there is little evidence that these institutions influence technology and knowledge dynamism. None of the graduates in the case studies reported to have links with their previous institutions. Moreover these graduates are too few to constitute a critical mass that would affect technology and knowledge development in the cluster.

### **3.5 State Policies and the Transfer of Knowledge and Skills in Kamukunji *Jua Kali* Cluster**

The formation of Kamukunji *Jua Kali* Welfare Organization was a government initiative. It is a membership organization linked to the Kenya Federation of *Jua Kali* Association. It was created to serve as the main platform for encouraging vertical joint action between the *jua kali* entrepreneurs such as buying land. It was also to serve as the avenue through which the government would communicate policies and interventions to *jua kali* entrepreneurs.

Some of the joint actions that are carried out by Kamukunji *Jua Kali* Welfare Association in conjunction with the Ministry of Human Resources and Labour include trade exhibitions and skill development programs. Intervention projects sponsored by UN organizations and international financial organizations have also been channeled through *jua kali* associations. Examples of these are the Voucher Training Programme for Skill Development, establishment of Ziwani Learning and Demonstration Centre and Kariobangi Training Centre.

Explicit policies on the promotion of knowledge and skills to *jua kali* enterprises gained ground in the 1980s. The government's attitude change towards *jua kali* was spurred by the social, political crises that took place in the country. Structural adjustment and the declining loyalty of the formal sector elite to the government prompted it to change attitude towards the *jua kali* economic initiatives. Kamukunji *jua kali* cluster was among the first beneficiaries of government projects geared towards the sector.

The national campaign on environmental conservation is a source of knowledge and technology in the clusters. For example, some entrepreneurs quickly copied the making of energy saving cooking stoves developed by KENGO, a local NGO. Its high market demand saw other entrepreneurs adopting the technology for making stoves and modifying it. Other efforts to support the sector include the creation of the Department of Micro and Small Enterprises in the Ministry of Labour.

Due to the political question of marginalization, social exclusion and the volatile nature of the question on poverty, ethnicity, policy concerns for the *jua kali* sector are treated with care not to dismantle the status quo. The entrepreneurs are suspicious of the state policies and it is only a few who respond to them. It is no wonder then that most of the entrepreneurs in the twenty cases observe that both the local and national governments do not support *jua kali* entrepreneurs especially on knowledge and technological issues. Most of the twenty case studies do not pay membership fees or attend meetings when they are called.

#### **4.0 Policy and Incentives**

The Sessional Paper No. 2 of 2005 on the Development of Micro and Small Enterprises for Wealth and Employment Creation recognises the limited access to skills and technology experienced by Micro and Small Enterprises (Kenya, 2005). The paper observes, "Kenya's Micro and Small Enterprises are characterised by restricted levels of technology, inappropriate technology and inadequate institutional capacity to support adaptation and absorption of modern technological skills. In addition, they also suffer lack of information on existing technologies and their potential for increased trade.

Specifically, MSEs suffer a weak environment that hampers coordination and transfer of appropriate technology. Consequently, the sector continues to experience low productivity, poor quality and limited range of products resulting in low competitiveness of the MSE products” (Kenya 2005: p.12).

In response to the technological demands of micro and small enterprises (MSEs) the government proposed the following:

- The policy framework will seek to enhance MSEs ability to adopt and adapt new technology. This will be done by improving institutions that support technology development, increase overall access to information and acquisition of technical skills. Five major institutions, the Kenya Industrial Research Development Institute (KIRDI), National Council of Science and Technology (NCST), Kenya Industrial Estates (KIE), Kenya Bureau of Standards (KBS) and the Productivity Centre of Kenya were charged with the responsibility of reviewing the current modes of technology acquisition and transfer. First, they were to come up with laws and legislation that would regulate and promote local and international technology transfer. Secondly, they were to encourage sub-contracting, franchising and licensing partnership and finally, they were supposed to be involved in the vetting and registration of imported technologies to control damping of obsolete technology.
- The paper also recognizes that local technology input is fairly low and it has to be imported from countries such as India, South Korea, Pakistan and China. To facilitate the importation of this technology, the government will waiver duty of basic engineering machines. For this to be done, MSE specific needs to develop appropriate technologies were to be made by the Department of Micro and Small Enterprises Development in the Ministry of Labour. Endeavors were also to be made to encourage commercialization of technology and viable institutions. Enhancement of research and development was another area that government policy sought to address. This was to be realized through the strengthening of links between MSEs and universities, technical institutions and research bodies.

- An MSE development technology fund was to be initiated to finance research and development. Other things that would be done within the policy framework were to improve access to the existing intellectual property system, promote skill acquisition and development and re-organized the MSE primary associations along sectoral lines.
- The Sessional Paper does not offer any specific incentives for promoting MSEs except the mentioning that duty would be waived on basic engineering machines. The policy is also not cluster specific. It is rather too general and does not show how collective efficiency, knowledge and technology flows would be diversified and advanced to enhance growth in the cluster.

The policy has good intention but it appears to be more of a top down approach to technology transfer whereby the micro and small entrepreneurs have to be recipients of what is produced from universities, technical institutions and research bodies. No stock on knowledge and technology aspects in the clusters has so far been undertaken so that interventions can begin from the known as well as improve acceptability by recipients.

The creativity of the entrepreneurs in combining factors of production to come up with products has also not been interrogated in order to come up with strategies based on cluster experience and universities and technical institutions experiences. This will involve MSEs in *jua kali* clusters working together with universities and government institutions to come up with some formidable knowledge and technology for growth.

### **5.0 Key Success Factors**

The success factors are cluster-specific and are defined as local factors of success in Table 1. Cluster-specific factors including technological innovation, knowledge, skills, market, organizational production are key success factors in the Kamukunji *Jua Kali* metal work cluster.

**Table 1 Key Success Factors**

<b>Factors</b>	<b>Local /cluster specific</b>	<b>National</b>
Innovation New methods of production, utilising raw materials and new designs	*	
Skill development and knowledge (growth and flow of new knowledge in the cluster)	*	
Quality and durability of products	*	
Business management	*	
Product technology	*	
Geographical location		*
Availability of markets	*	*
Production of multiple products	*	

Kamukunji *jua kali* entrepreneurs quickly observe new products in the market, study them and design methods of producing similar products or others that can serve the same purpose. The evolution of skills, which is energised by the flow of information in the cluster, facilitates its success over other clusters nationally. Its unique specialization in metal work, makes it stand out vis-à-vis other clusters in the country. Firm organization translated into good management practice enhances the flow of knowledge and information either of production nature or marketing.

The levels of diversification in terms of products types is a clear advantage in terms of interdependence and subcontracting between firms and also the fact that the customer can find everything he or she needs in one roof. Geographical proximity in relation to the main bus terminus facilitates accessibility to the city and outside the city. Rural customers coming for metal agricultural products can easily access the cluster. This also applies to traders who buy products from the cluster for sale to other parts of the country.

Its proximity to industrial area and Kirinyaga Road ensures availability of raw materials to the cluster.

The cluster is also able to build on its past experience. The cluster has been able to go through three main technological generation stages. It has been able to adapt and change machinery used in the past to make new products such as electricity-based products. The cluster learns from past mistakes made by those before them.

Knowledge is a key success factor in the cluster. The informants observed that it has its unique knowledge, which flows between the entrepreneurs who learn from each other very fast. There is also a lot of knowledge sharing and innovators allow others to copy and adapt new technology. This flow of knowledge has enhanced the survival of the cluster. A metal box maker, for example, will paint his box blue, another one will add unto this by adding white dots or binding the sharp bends on the box. This way of doing things is quickly adopted by other metal box makers in the cluster with each putting in a new addition. This knowledge was said to be the absolute reason for success of the cluster by one of the respondents.

The cluster knowledge and technology base has evolved with limited influence from national polytechnics, universities and other technical institutes. The twenty respondents did not view fresh graduates from national institutes of technology, national polytechnics or universities as sources of knowledge in the cluster. This is one area that needs further investigation because in the section on policy we observed that the government was planning a link between the *jua kali* sector and local institutions of knowledge transfer, that is, institutes of technology, technical institutes and the universities. It is not clear which knowledge niche these institutions will provide in the cluster.

## **6.0 Lessons learnt and Policy Implications**

The first lesson learnt is that knowledge and technology in Kamukunji *jua kali* enterprise cluster is dynamic and has evolved over time. Knowledge and technology is abundant and forms a basis for business survival and growth.



A web of social relations constitutes the basis of knowledge and technological spill over and transfer among the enterprises. It also appears that the cluster's main source of knowledge is the entrepreneurs themselves, companies' retrenches and customers. The state and donor agencies attempts to intervene in technology and knowledge in the cluster have yielded limited success.

Human capital development is realized through on job training for younger entrepreneurs. Most of the skills and technology in the cluster is obtained through personal relationships and face-to-face interaction. The cluster attracts entrepreneurs with low levels of education with most them having primary and secondary education. Once an entrepreneur joins the cluster he or she undergoes through a process of socialization, which involves skill drills, and hard work. The hostile business environment initiates the tendency for one to rely on his or her own initiatives.

The entrepreneurs have limited relationships with local technical institutes, youth polytechnics, national polytechnics and universities. The other thing we learn is that there is a combination of indigenous artisan skills and technological processes in the cluster. Most of the skills are acquired on the job either through training or by dismantling products and assembling them again.

## **7.0 Challenges facing the cluster**

### **7.1 Political will for bringing about change in the cluster**

It appears there is a mismatch between policy and political will to implement this policy. All the case studies felt that the government had neglected them. They said that they have heard of funding and training programmes for the *jua kali*. But these programmes do not reach them.

There is no mechanism that facilitates the movement of information and knowledge from the bureaucracy of the government to the cluster. The Local Authorities under which the jurisdiction of the Kamukunji *Jua Kali* cluster lies is only concerned with the collection of rates payments and trade licenses. According to one respondent, in his fifteen years of stay in kamukunji cluster, he has never seen any improvement of sanitation facilities or streets to facilitate movement. He also said that the rate at which the local authority collects money from him does not match that of the provision of services.

### **7.2 Heavy Turnover of employees and Trainee**

There is a substantial movement of employees and trainees in the cluster. The trainees and employees move out to start their own business after gaining experience and raising money in the cluster or outside the cluster. The labour contracts are largely informal and not binding. Most workers are paid on piecework rate and can quit when they want without notice.

### **7.3 Lack of Certification after on Job Training**

The trainers have not recognised the importance of issuing certificates to employees. According to one respondent their kind of profession does not require possession of certificates. He also said that employees are there to gain skills to enable them earn a living through self-employment and that certificates are for those in schools. Although the cluster has an association, the issue of providing certificates has never risen and the ministry concerned has never raised the issue.

### **7.4 Lack of links between the cluster and learning institutions**

Although students from learning institutions like Kenya, Mombasa and Eldoret polytechnics go for attachments at Kamukunji enterprise cluster, there is yet to be established any formal link between the two. Some informants claimed that graduates from these institutions lack practical experience.

### **7.5 Poor infrastructure and substandard architectural designs.**

Sheds and other structures in Kamukunji cluster were constructed in the 80s and were only meant for a few artisans. The population has increased to 5000 people subsequently, the cluster is overcrowded and it is difficult for an entrepreneur to keep trade secrets since all production work is done in the open. Essentially conflicts arise as to when technological and knowledge spill over are positive for growth and when they involve illegal imitation of other peoples work.

### **8.0 recommendations**

There is need to improve the physical landscape of the Kamukunji *Jua Kali* cluster. The following services should be provided: laboratory services, sanitation, lighting and electricity for industrial use, improved links between the cluster and the learning institutions. There is need to make the *jua kali* associations more responsive to the entrepreneurs knowledge and technology status. This will involve capacity building of the officials. First, this can be done through regular elections and writing an all-inclusive constitution for the association that will recognise the local institutions and organisations based on the clusters' social and cultural institutions. The second one will consist of the capacity building of the association directing it more towards business concerns, a lobby and advocacy institution and a professional organisation. The association could also be linked to other business associations and local chambers of commerce.

Knowledge and technological spillover and transfer could be enhanced if the image and visibility of the cluster is improved. Local learning institutions could play a critical role if they viewed *jua kali* enterprises through the *jua kali* lenses. This will involve the appreciation of the clusters ability to evolve its own organisations based on social relations that determine the rules of the game as well as acknowledge the local self-initiatives of knowledge and technology in the cluster.

There is need to integrate the learning processes in Kamukunji *Jua Kali* Association with learning institutions so that the students can be exposed to both theoretical and practical knowledge. This is because it is not only technical skills that make good entrepreneurs.

Entrepreneurs need both practical and theoretical knowledge. They also need to know government policies and marketing information. There is also need for support organisations to recognise the already existing learning institutions. These efforts should be geared towards enhancing peer-learning networks into continuous lifelong learning institutions for generating knowledge and technology in the cluster.

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